In the Claims

1. (**currently amended**) An apparatus for the automated solid-phase synthesis of oligosaccharides, comprising:

a reaction vessel containing at least one insoluble resin bead, wherein the at least one insoluble resin bead is comprised of an octenediol functionalized resin;

at least one donor vessel containing a saccharide donor solution;

at least one activator vessel containing an activating reagent solution;

at least one deblocking vessel containing a deblocking reagent solution;

at least one solvent vessel containing a solvent;

a solution transfer system capable of transferring the saccharide donor solution, activating reagent solution, deblocking reagent solution, and solvent to the reaction vessel; and

a computer for controlling the solution transfer system.

2. (**original**) The apparatus of claim 1, wherein the at least one insoluble resin bead has a glycosyl acceptor tethered to the resin bead via an organic linker.

3. (**original**) The apparatus of claim 1, further comprising a temperature control unit for regulating the temperature of the reaction vessel.

4. (**original**) The apparatus of claim 3, wherein the temperature control unit is controlled by the computer.

5. (**original**) The apparatus of claim 3, wherein the temperature control unit measures the internal temperature of the reaction vessel.

6. (**original**) The apparatus of claim 3, wherein the reaction vessel is a double-wall structure forming two cavities, wherein the first cavity accommodates the synthesis of oligosaccharides, and wherein the second cavity accommodates a coolant of the temperature control unit.

7. (**original**) The apparatus of claim 6, wherein the double-wall structure of the reaction vessel is comprised of glass.

8. (**original**) The apparatus of claim 3, wherein the temperature control unit is capable of maintaining the reaction vessel at a temperature of between -80C and +60C.

9. (**original**) The apparatus of claim 3, wherein the temperature control unit is capable of maintaining the reaction vessel at a temperature of between -25C and +40C.

10. (**original**) The apparatus of claim 1, wherein the at least one donor vessel contains a solution comprising a glycosyl trichloroacetimidate.

11. (**original**) The apparatus of claim 1, wherein the at least one donor vessel contains a solution comprising a glycosyl phosphate.

12. (**original**) The apparatus of claim 1, wherein the at least one activator vessel contains a solution comprising a Lewis acid.

13. (**original**) The apparatus of claim 12, wherein the at least one activator vessel contains a solution comprising a silyl trifluoromethanesulfonate.

14. (**original**) The apparatus of claim 12, wherein the at least one activator vessel contains a solution comprising trimethylsilyl trifluoromethanesulfonate.

15. (**original**) The apparatus of claim 1, wherein the at least one deblocking vessel contains a solution comprising sodium methoxide.

16. (**original**) The apparatus of claim 1, wherein the at least one deblocking vessel contains a solution comprising hydrazine.

17. (**original**) The apparatus of claim 1, wherein the at least one solvent vessel contains dichloromethane.

18. (**original**) The apparatus of claim 1, wherein the at least one solvent vessel contains tetrahydrofuran.

19. (**original**) The apparatus of claim 1, wherein the at least one solvent vessel contains methanol.

20. (**original**) The apparatus of claim 2, wherein the at least one donor vessel contains a solution comprising a glycosyl trichloroacetimidate, the at least one activator vessel contains a solution comprising trimethylsilyl trifluoromethanesulfonate, the at least one deblocking vessel contains a solution comprising sodium methoxide, a first solvent vessel contains dichloromethane, a second solvent vessel contains methanol, and a third solvent vessel contains tetrahydrofuran.

21. (**original**) The apparatus of claim 2, wherein the at least one donor vessel contains a solution comprising a glycosyl phosphate, the at least one activator vessel contains a solution comprising trimethylsilyl trifluoromethanesulfonate, the at least one deblocking vessel contains a solution comprising sodium methoxide, a first solvent vessel contains dichloromethane, a second solvent vessel contains methanol, and a third solvent vessel contains tetrahydrofuran.

22. (**original**) The apparatus of claim 1, further comprising at least one blocking vessel containing a blocking reagent solution.

23. (**original**) The apparatus of claim 22, wherein the at least one blocking vessel contains a solution comprising benzyl trichloroacetimidate.

24. (**original**) The apparatus of claim 22, wherein the at least one blocking vessel contains a solution comprising a carboxylic acid.

25. (**original**) The apparatus of claim 24, wherein the carboxylic acid is levulinic acid.

26. (**original**) The apparatus of claim 22, further comprising a temperature control unit for regulating the temperature of the reaction vessel, and wherein the at least one insoluble resin bead has a glycosyl acceptor tethered to the resin bead via an organic linker.

27. (**original**) The apparatus of claim 26, wherein the at least one blocking vessel contains a solution comprising levulinic acid, the at least one donor vessel contains a solution comprising a glycosyl phosphate donor, the at least one activator vessel contains a solution comprising trimethylsilyl trifluoromethanesulfonate, the at least one deblocking vessel contains a solution comprising hydrazine, a first solvent vessel contains

dichloromethane, a second solvent vessel contains methanol, and a third solvent vessel contains tetrahydrofuran, a fourth solvent vessel contains a solution comprising pyridine and acetic acid, and a fifth solvent vessel contains a 0.2 M solution of acetic acid in tetrahydrofuran.

28. (**original**) The apparatus of claim 26, wherein the at least one blocking vessel contains a solution comprising levulinic acid, a first donor vessel contains a solution comprising a glycosyl trichloroacetimidate, a second donor vessel contains a solution comprising a first glycosyl phosphate, a third donor vessel contains a solution comprising a second glycosyl phosphate, the at least one activator vessel contains a solution comprising trimethylsilyl trifluoromethanesulfonate, a first deblocking vessel contains a solution comprising hydrazine, a second deblocking vessel contains a solution comprising sodium methoxide, a first solvent vessel contains dichloromethane, a second solvent vessel contains methanol, and a third solvent vessel contains tetrahydrofuran, a fourth solvent vessel contains a solution comprising pyridine and acetic acid, and a fifth solvent vessel contains a 0.2 M solution of acetic acid in tetrahydrofuran.

29. (**canceled**)

30. (**original**) The apparatus of claim 2, wherein the organic linker is comprised of a glycosyl phosphate.

Claims 31-58 (**canceled**)